

**ABSTRACT**

A new three-dimensional imaging device has been needed to overcome the problems of the prior arts that the used variable focal length lenses that are still slow, have 5 small focal length variation and low focusing efficiency, and requires a complex mechanism to control it. The invented three-dimensional imaging system uses the variable focal length micromirror array lens. Since the micromirror array lens has lots of advantages such as very fast 10 response time, large focal length variation, high optical focusing efficiency, large size aperture, low cost, simple mechanism, and so on, the three-dimensional imaging device can get a real-time three-dimensional image with large depth range and high depth resolution.